

Star schema

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The **star schema** (sometimes referenced as star join schema) is the simplest style of [data warehouse schema](#), consisting of a few "[fact tables](#)" (possibly only one, justifying the name) referencing any number of "[dimension tables](#)". The "facts" that the data warehouse helps analyze are classified along different "dimensions": the fact tables hold the main data, while the usually smaller dimension tables describe each value of a dimension and can be joined to fact tables as needed.

Dimension tables have a simple [primary key](#), while fact tables have a compound [primary key](#) consisting of the aggregate of relevant dimension keys.

It is common for dimension tables to consolidate redundant data and be in [second normal form](#), while fact tables are usually in [third normal form](#) because all data depend on either one dimension or all of them, not on combinations of a few dimensions.

The star schema is a way to implement multi-dimensional database ([MDDB](#)) functionality using a mainstream [relational database](#): given the typical commitment to relational databases of most organizations, a specialized multidimensional DBMS is likely to be both expensive and inconvenient.

Another reason for using a star schema is its simplicity from the users' point of view: queries are never complex because the only joins and conditions involve a fact table and a single level of dimension tables, without the indirect dependencies to other tables that are possible in a better normalized [snowflake schema](#).

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Consider a database of sales, perhaps from a store chain, classified by date, store and product.

`f_sales` is the fact table and there are three dimension tables `d_date`, `d_store` and `d_product`.

Each dimension table has a primary key called `id`, corresponding to a three-column primary key (`date_id`, `store_id`, `product_id`) in `f_sales`.

Data columns include `f_sales.units_sold` (and sale price, discounts etc.); `d_date.year` (and other date components); `d_store.country` (and other store address components); `d_product.category` and `d_product.brand` (and product name etc.).

The following query extracts how many TV sets have been sold, for each brand and country, in 1997.

```
SELECT
  P.brand, S.country, sum (FS.units_sold)
FROM
  f_sales FS
  INNER JOIN d_date D ON D.id = FS.date_id
  INNER JOIN d_store S ON S.id = FS.store_id
  INNER JOIN d_product P ON P.id = FS.product_id
WHERE
  D.year = 1997
  AND
  P.category = 'tv'
GROUP BY
  P.brand, S.country
```

[edit] See also

- [Snowflake schema](#)

[edit] References

- [Darmawikarta, Djoni \(2007\); *Dimensional Data Warehousing with MySQL*, Pub. BrainySoftware. ISBN 0975212826.](#)

[edit] External links

- [Designing the Star Schema Database by Craig Utley](#)
- [Star Schema for Retail Sales](#)
- [Stars: A Pattern Language for Query Optimized Schema](#)
- [Star schema optimizations](#)

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